

RITS Special Edition

Computer and Web-Based T2 Tools

Remediation Technology Evaluation Tool

NAVFAC

Remediation Technology Evaluation Tool

TECHNOLOGY SCREENING AND RANKING WIZARDS

SOIL SEDIMENT(Underwater)

TECHNOLOGY-BASED COST MODELS

LNAPL	DNAPL	GROUNDWATER
Select a model...	Select a model...	Select a model...
SOIL	SEDIMENT (Underwater)	SPECIAL SITE COND.
Select a model...	Select a model...	Select a model...

Exit

NAVFAC



Introduction

■ What's the Purpose?

- ◆ Technology cost comparison
- ◆ Technology screening and ranking

■ Who Developed It?

- ◆ Cost models developed for NORM/CTC
- ◆ Navy CTC Workgroup and Navy contractors

■ What's Included?

- ◆ Life-cycle cost estimates for 36 technologies
- ◆ Technology Screening and Ranking Wizards for LNAPL, DNAPL, soil, sediment, and groundwater
- ◆ Detailed technology and cost Help information

Structure

■ Main

- ◆ Technology screening and ranking wizards
- ◆ Technology-based cost models
 - LNAPL (4 technologies)
 - DNAPL (4 technologies)
 - Groundwater (11 technologies)
 - Soil (23 technologies)
 - Sediment (16 technologies)
 - Special site conditions (8 cost models)

■ Help



Web Address and POCs

- What is the Web Address (to Download)?
http://enviro.nfesc.navy.mil/erb/restoration/technologies/sel_tools/main.htm
- Who Can I Contact For Additional Information?
 - ◆ Navy POC: (805) 982-5070
 - ◆ Battelle POC: (614) 424-7723

Getting Started

Remediation Technology Evaluation Tool

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Remediation Technology Evaluation Tool

TECHNOLOGY SCREENING AND RANKING WIZARDS

Click on specific media for technology screening and ranking

LNAPL DNAPL GROUNDWATER
SOIL SEDIMENT(Underwater)

TECHNOLOGY-BASED COST MODELS

LNAPL	DNAPL	GROUNDWATER
Select a model...	Select a model...	Select a model...
SOIL	SEDIMENT (Underwater)	SPECIAL SITE COND.
Select a model...	Select a model...	Select a model...

Exit

Select technology from specific media to begin cost modeling process

Required Parameters

Draw-Down Pumping – Required Parameters

Required parameters require input from the user. Specific information about the remediation project must be provided so that secondary parameters and cost estimates can be generated.

PARAMETER	VALUE	UNITS
<input type="checkbox"/> Interim Remedial Action		
Soil Type	Sandy Silt/Clay	
Area of NAPL Source	0.5	Ac
Depth to Groundwater	12	Ft
Aquifer Saturated Thickness	30	Ft

Enter the site-specific information necessary for cost estimating

<Back Exit Clear Finish Next>

Secondary Parameters

Draw-Down Pumping – Secondary Parameters

All secondary parameters have been given default values, some of which are calculated from required parameters (indicated by purple text). These parameters do not require input from the user if the user chooses to accept the default values. The user may also choose to override the default values to better describe the remediation project of interest.

PARAMETER	VALUE	UNITS
<input checked="" type="checkbox"/> Halogenated VOCs		
<input checked="" type="checkbox"/> Nonhalogenated VOCs		
<input type="checkbox"/> Halogenated SVOCs and Pesticides		
<input type="checkbox"/> Nonhalogenated SVOCs		
Operation and Maintenance Duration	2.0	Yr
Personal Protective Equipment (PPE) Level	D	
Number of Extraction Wells	20	Ea
Total Liquid Flowrate	200	GPM
Vapor Treatment Flowrate	1000	CFM

Select contaminant type

Review default and calculated parameters and modify as necessary

<Back Exit Finish Next>

View Costs

74 Draw-Down Pumping – Costs Summary

Technology Cost Summary

Design Cost:	38,688
Construction Cost:	751,831
Operation & Maintenance Cost:	584,162
Total Cost:	1,374,681

<Back

Exit

Print

View Tree

Cost Element Selection

**View cost
estimate
results**

**Select view tree for a detailed cost
breakdown and to adjust cost details**

View Cost Breakdown and Adjust Costs

The screenshot displays the NAVFAC Remediation Technology Evaluation Tool interface. The main window shows a hierarchical tree of cost elements. A blue arrow points from the text "View cost details" to the "Catalytic Oxidation" folder. Another blue arrow points from the text "Click on folder to make specific adjustments and refine overall costs" to the "Catalytic Oxidation" folder in the tree.

View cost details

Click on folder to make specific adjustments and refine overall costs

Legend

- Technology
- Cost Module
- Cost Element

Sampling and Analysis

Phase	
1. PA / SI:	\$ 0
2. RI / FS:	\$ 0
3. Design:	\$ 0
4. Construction:	\$ 14,640
5. IRA:	\$ 0
6. O&M:	\$ 56,448
7. LTM:	\$ 0
Total:	\$ 71,088

Catalytic Oxidation - Cost Element

Required Parameters Secondary Parameters Costs Summary

PARAMETER	VALUE	UNITS	DEFAULT
Treatment Flowrate	1000	CFM	1000
Operation and Maintenance Duration	2.0	Yr	2.0

Valid range: 20.00 to 5000.00 (inclusive)

Close

Technology Screening Wizard

Wizard Questions

Information entered here will help the wizard determine which technologies may be suitable for your project.

Select contaminants present

- ☒ Halogenated VOCs
- ☒ Nonhalogenated VOCs
- ☐ Halogenated SVOCs and Pesticides
- ☐ Nonhalogenated SVOCs
- ☐ Polychlorinated Biphenyls (PCBs)
- ☐ Ordnance Compounds
- ☐ Inorganic Compounds

PCBs are a class of biphenyl compounds with two or more chlorines attached and are typically analyzed using extraction methods such as EPA Method 608. Example: Aroclor-1016. PCB contamination of groundwater is unlikely due to the high sorption coefficient and low water solubility. Disposal of PCB containing wastes is regulated under the Toxic Substances Control Act (40 CFR 750 and 761).

Enter additional information requested

Wizard Questions

Information entered here will help the wizard determine which technologies may be suitable for your project.

Remediation Schedule:

Plume status:

☐ Hydraulic Conductivity less than 0.3 ft/day

☐ Aquitard/confining layer depth greater than 80 ft

Roll cursor over text for helpful decision-making tips

Technology Screening Wizard (Cont.)

74 Ranking Criteria Selection

Several criteria have been developed for GROUNDWATER treatment technology ranking. Please select the criteria that are important decision drivers in your selection of the GROUNDWATER treatment system

<input checked="" type="checkbox"/> Short Term Effectiveness	<input type="checkbox"/> Schedule
<input checked="" type="checkbox"/> Long Term Effectiveness	<input checked="" type="checkbox"/> Regulatory Acceptance
<input type="checkbox"/> Constructability	<input type="checkbox"/> Community Acceptance
<input checked="" type="checkbox"/> Operability	<input checked="" type="checkbox"/> Capital Costs
<input type="checkbox"/> Development Status	<input type="checkbox"/> Operation and Maintenance Costs

Cancel <<Back Next>> Finish

Select criteria that are decision drivers in selection of your system

Rate the importance of selected criteria (scale of 1 to 10)

74 Ranking Criteria Importance

On a scale of 1 to 10, with 10 representing high importance and 1 representing minimal importance, indicate a level of importance for each of your selected criteria. Note that 2 or more criteria can have the same level of importance, and that the default level for each criteria is set to 5

Short Term Effectiveness	8	Schedule	0
Long Term Effectiveness	8	Regulatory Acceptance	9
Constructability	0	Community Acceptance	0
Operability	7	Capital Costs	6
Development Status	0	Operation and Maintenance Costs	0

Cancel <<Back Next>> Finish

View Results

7x Ranked List of Treatment Technologies

The results from the GROUNDWATER Screening and Ranking Wizard are provided below, including the relative rank, or score, for the technology and an initial cost estimate. To refine the cost estimate, click on the cost

Technology	Short Term Effectiveness	Long Term Effectiveness	Constructability	Operability	Development Status	Schedule	Regulatory Acceptance	Community Acceptance	Capital Costs	Operation and Maintenance Costs	Total Score	Cost Estimate
Air Sparging	6.0	6.0	0	5.3	0	0	6.8	0	1.2	0	25.0	\$2,564,204
Two-Phase Extraction	6.0	6.0	0	5.3	0	0	4.5	0	1.2	0	23.0	\$3,502,042
Vertical Cut-Off Wall	6.0	2.0	0	3.5	0	0	4.5	0	4.8	0	22.0	\$141,318
In-Well Air Stripping	4.0	6.0	0	3.5	0	0	4.5	0	1.2	0	20.0	\$3,242,665
Pump and Treat	2.0	2.0	0	3.5	0	0	6.8	0	4.8	0	19.0	\$2,308,546

View the total score for technologies ranked

Click on costs to see the tree view cost estimate breakdown